

An Examination of the Space Weathering Patina of Lunar Rock 76015 – S. Noble, L. Keller, R. Christoffersen, Z. Rahman

Space weathering discussions have generally centered around soils but exposed rocks will also incur the effects of weathering. Rocks have much longer surface lifetimes than an individual soil grain and thus record a longer history of exposure. By studying the weathering products which have built up on a rock surface, we can gain a deeper perspective on the weathering process and better assess the relative importance of various weathering components.

The weathered coating, or patina, of the lunar rock 76015 has been previously studied under SEM and also by TEM using ultramicrotome sample preparation methods. However, to really understand the products involved in creating these coatings, it is helpful to examine the patina in cross section, something which is now possible through the use of Focused Ion Beam (FIB) sample prep techniques, which allows us to preserve intact the delicate stratigraphy of the patina coating and provides a unique cross-sectional view of the space weathering process. Several samples have been prepared from the rock and the coatings are found to be quite variable in thickness and composition from one sample to the next.